

Appl. No. : 10/638,173
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IN THE CLAIMS:

1-26. (Cancelled)

27. (New) A composite array, comprising:

a substrate having a surface;

a first assay location on said surface comprising a first population of microspheres; and

a second assay location on said surface comprising a second population of microspheres,

wherein each of said microspheres comprise a bioactive agent and wherein said first assay location and said second assay location are separated from each other by a physical partition.

28. (New) The composite array of Claim 27, wherein said microspheres are randomly distributed at said first assay location and said second assay location.

29. (New) The composite array of Claim 27, wherein said physical partition is a non-permanent sealant

30. (New) The composite array of Claim 29, wherein said non-permanent sealant is selected from the group consisting of rubber, silicon, petroleum jelly, wax and parafilm.

31. (New) The composite array of Claim 27, wherein said physical partition is a ridge or rim of sufficient width and height to prevent said bioactive agents from moving from said first assay location to said second assay location.

32. (New) The composite array of Claim 27, wherein said physical partition is a trough of sufficient width and depth to prevent said bioactive agents from moving from said first assay location to said second assay location.

33. (New) The composite array of Claim 27, wherein said physical partition comprises a gasket.

34. (New) The composite array of Claim 33, wherein said gasket comprises rubber or silicon.

35. (New) The composite array of Claim 33, wherein said gasket is adapted to fit within an indentation or channel on the substrate.

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36. (New) The composite array of Claim 27, wherein said first and second assay locations are separated by a distance of less than 25 μm .

37. (New) The composite array of Claim 27, wherein said first and second assay locations are separated by a distance of less than 15 μm .

38. (New) The composite array of Claim 27, wherein said bioactive agent comprises DNA.

39. (New) The composite array of Claim 27, wherein said substrate comprises a microscope slide.

40. (New) The composite array of Claim 27, wherein said substrate is enclosed within a hybridization chamber.

41. (New) The composite array of Claim 40, wherein said hybridization chamber comprises flexible membranes.

42. (New) The composite array of Claim 27, wherein said first and second assay locations are separately enclosed within a first and a second hybridization chamber.

43. (New) A method of making a composite array comprising:

providing a substrate having a surface comprising at least two assay locations, wherein said assay locations comprise a plurality of discrete sites each configured to hold a single microsphere;

providing a population of microspheres, wherein each of said microspheres comprises a bioactive agent;

randomly distributing said population of microspheres at said assay locations so that said discrete sites become filled with one of said microspheres; and

providing a physical partition on said surface, wherein said physical partition separates said first and said second assay location.

44. (New) The method of Claim 43, wherein said physical partition is a non-permanent sealant

45. (New) The method of Claim 44, wherein said non-permanent sealant is selected from the group consisting of rubber, silicon, petroleum jelly, wax and parafilm.

46. (New) The method of Claim 43, wherein said physical partition is a ridge or rim of sufficient width and height to prevent said bioactive agents from moving from said first assay location to said second assay location.

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47. (New) The method of Claim 43, wherein said physical partition is a trough of sufficient width and depth to prevent said bioactive agents from moving from said first assay location to said second assay location.

48. (New) The method of Claim 43, wherein said physical partition comprises a gasket.

49. (New) The method of Claim 48, wherein said gasket comprises rubber or silicon.

50. (New) The method of Claim 48, wherein said gasket is adapted to fit within an indentation or channel on the substrate.

51. (New) The method of Claim 43, wherein said first and second assay locations are separated by a distance of less than 25 μm .

52. (New) The method of Claim 43, wherein said first and second assay locations are separated by a distance of less than 15 μm .

53. (New) The method of Claim 43, wherein said bioactive agent comprises DNA.

54. (New) The method of Claim 43, wherein said substrate comprises a microscope slide.

55. (New) The method of Claim 43, wherein said substrate is enclosed within a hybridization chamber.

56. (New) The method of Claim 55, wherein said hybridization chamber comprises flexible membranes.

57. (New) The composite array of Claim 43, wherein said first and second assay locations are separately enclosed within a first and a second hybridization chamber.

58. (New) The method of Claim 43, wherein said discrete sites are formed by etching.

59. (New) The method of Claim 43, wherein said discrete sites are wells.